Tennessee Technological University
Mathematics Department

MATH 6810: Partial Differential Equations

I. COURSE DESCRIPTION FROM CATALOG: First and Second order PDE's, wave, heat, and Laplace's equations, applications to boundary and eigenvalue problems of mathematics, physics and engineering. Lec. 3. Cr. 3.

II. PREREQUISITE(S): Consent of instructor

III. COURSE OBJECTIVE(S): To study methods of solving analytic solutions to PDE's. Applications of PDE's are also included.

IV. TOPICS TO BE COVERED:

The single First Order Equations
- The Cauchy Problem
- Solution Generated as Envelopes

Hyperbolic Equations
- Characteristics for Hyperbolic Equations
- The one-dimensional Wave Equations

Laplace Equations
- Green Identity, Fundamental Solutions
- The Maximum Principle
- The Dirichlet Problem, Green's Function and Poisson Formula
- Solution of Dirichlet Problem by Hilbert Space Methods

Parabolic Equations
- Maximum principle
- Uniqueness
- Regularity

V. ADDITIONAL INFORMATION:

VI. POSSIBLE TEXTS AND REFERENCES:
Partial Differential Equations, An Introduction, by Walter A. Strauss.
Partial Differential Equations, Theory and Technique, 2nd edition, by George f. Carrier & Carl E. Pearson.
An Introduction to Partial Differential Equations by Pinchover & Rubinstein
Partial Differential Equations, 4th edition, by Fritz John

VII. ANY TECHNOLOGY THAT MAY BE USED: